

- 1.1. ALL MEASURES WILL BE REVIEWED AFTER INSTALLATION AND APPROVED BY OWNER AND CITY
- 1.2. SUBSTITUTIONS OR ALTERNATIVE METHODS OR MATERIALS SHALL BE REVIEWED AND APPROVED BY CITY ARBORIST.
- 1.3. ALL TREE PROTECTION MEASURES MUST BE IN PLACE PRIOR TO COMMENCEMENT OF DEMOLITION, SITE CLEARING OR CONSTRUCTION AND MAINTAINED THROUGHOUT CONSTRUCTION.
- TREE PROTECTION MEASURES MAY ONLY BE REMOVED WITH CITY ARBORIST APPROVAL. 1.4. REFER TO THE TREE PROTECTION ACTION KEY (TPAK) FOR SPECIFIC RECOMMENDATIONS FOR

2. <u>REMOVAL BY ARBORIST</u>

- 2.1. TREES DESIGNATED AS "REMOVAL BY ARBORIST" SHALL BE REMOVED BY A QUALIFIED ARBORIST "BY HAND", TO MINIMIZE POTENTIAL FOR DAMAGE TO REMAINING TREES AND ROOTS. 2.2. CREWS SHALL BE DIRECTLY SUPERVISED BY A CERTIFIED ARBORIST.
- 2.3. TRUCKS AND MECHANIZED EQUIPMENT SHALL NOT ENTER THE FENCED TREE PROTECTION AREAS.
- 2.4. STUMPS SHALL BE LEFT IN PLACE OR GROUND OUT AT THE OWNERS DISCRETION. STUMPS IN TURF/LANDSCAPE AREAS OR WITHIN ROOT AERATION MATTING AREAS SHALL BE GROUND.
- 2.5. STUMP GRINDING SHALL BE WITH SMALL MACHINES SPECIFICALLY DESIGNED FOR THAT PURPOSE. NO STUMPS SHALL BE EXCAVATED EXCEPT AS DESCRIBED HEREIN. STUMPS SHALL BE GROUND NOT MORE THAN 8" BELOW GRADE AND CARE MUST BE TAKEN TO MINIMIZE DAMAGE TO ROOTS OF RETAINED TREES.

3. TREE PROTECTION FENCE 3.1. TYPICALLY, INSTALL AFTER ROOT PRUNING AND PRIOR TO CLEARING & GRADING.

- 3.2. FENCE SHALL BE ONE OF THE FOLLOWING: (SEE DETAIL)
- 3.2.1. 4' HIGH, 14 GAUGE WELDED WIRE FENCE MOUNTED ON 6' STEEL "T" POSTS SPACED NOT MORE THAN 10' APART. FENCE SHALL BE ATTACHED TO POSTS USING GALVANIZED STEEL CLIPS OR ALUMINUM TIES. PLASTIC "ZIP" TIES SHALL NOT BE USED.
- 3.2.2. 6' HIGH CHAIN LINK FENCE FABRIC MOUNTED ON 8', 1.5"Ø GALVANIZED STEEL PIPE LINE POSTS. CORNER POSTS SHALL BE 2"Ø. FENCE SHALL BE ATTACHED TO POSTS USING ALUMINUM TIES. PLASTIC "ZIP" TIES SHALL NOT BE USED.
- 3.2.3. SUPER SILT FENCE INSTALLED AS SPECIFIED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
- 3.3. TREE PROTECTION AREA SIGNS SHALL BE AFFIXED TO ALL TREE PROTECTION FENCE AT 30' SPACING AVERAGE. SIGNS SHALL BE BILINGUAL (ENGLISH AND SPANISH). SIGNS SHALL NOT BE AFFIXED DIRECTLY TO TREES. SEE DETAIL.
- 3.4. SILT FENCE SHALL BE COORDINATED FOR INSTALLATION TO ENHANCE PROTECTION AND AVOID UNNECESSARY ROOT CUTS BY SILT FENCE INSTALLATION.
- 3.5. FENCE MAY BE REMOVED ONLY AFTER ALL CONSTRUCTION AND FINAL LANDSCAPING IS COMPLETE AND WITH CITY ARBORIST APPROVAL.

- 4.1. THE EXACT LOCATION AND DEPTH WILL BE DETERMINED DURING THE PRE-CONSTRUCTION MEETING. SPECIFIC EQUIPMENT & METHODS WILL BE DETERMINED BY CITY ARBORIST BASED UPON DEPTH & TREE IMPACT. (SEE DETAIL)
- 4.2. HAND PRUNE ROOTS OVER 1" DIAMETER WITHIN CRZS OF SIGNIFICANT TREES. STEEP SLOPES, DEEP EXCAVATIONS AND PAVEMENT/CURB REMOVAL WILL BE REVIEWED WHEN OPEN FOR HAND ROOT PRUNING DURING CONSTRUCTION.
- 4.3. COORDINATE WITH SILT FENCE INSTALLATION TO MINIMIZE UNNECESSARY ROOT DAMAGE.

4.4. ROOT PRUNING SHALL BE PERFORMED BY A CERTIFIED ARBORIST

5. <u>WOOD CHIP MULCH</u>

- 5.1. INSTALL MULCH FOR DESIGNATED SIGNIFICANT TREES. MULCH AREA SHALL BE ONE OF THE FOLLOWING, AT THE DISCRETION OF THE CONTRACT ARBORIST AND OWNER:
- 5.1.1. INSTALL MULCH BED RINGS. MULCH SHOULD COVER AT LEAST THE ENTIRE STRUCTURAL ROOT ZONE. LARGER MULCH BEDS ARE PREFERRED.
- 5.1.2. PROVIDE CONTINUOUS MULCH STRIP 10' TO 15' WIDE ALONG LOD WITHIN PRESERVED CRZ AREAS.

5.2. MULCH SHALL BE INSTALLED TO A DEPTH OF 4".

- 5.3. MULCH SHALL BE DOUBLE GROUND SHREDDED HARDWOOD, AGED FOR AT LEAST 6 MONTHS FROM AN APPROVED SOURCE. INSUFFICIENTLY OR IMPROPERLY AGED MULCH CONTAINING HIGH BACTERIAL COUNTS OR HIGH LEVELS OF BARK OR OTHER MATERIALS RESISTANT TO DECOMPOSITION SHALL NOT BE USED. MULCH SHALL NOT CONTACT TRUNK OF TREES.
- 5.4. EDGING IS NEITHER NECESSARY NOR DESIRABLE FOR THIS OPERATION.

6. <u>CONSTRUCTION MONITORING/INSPECTIONS</u>

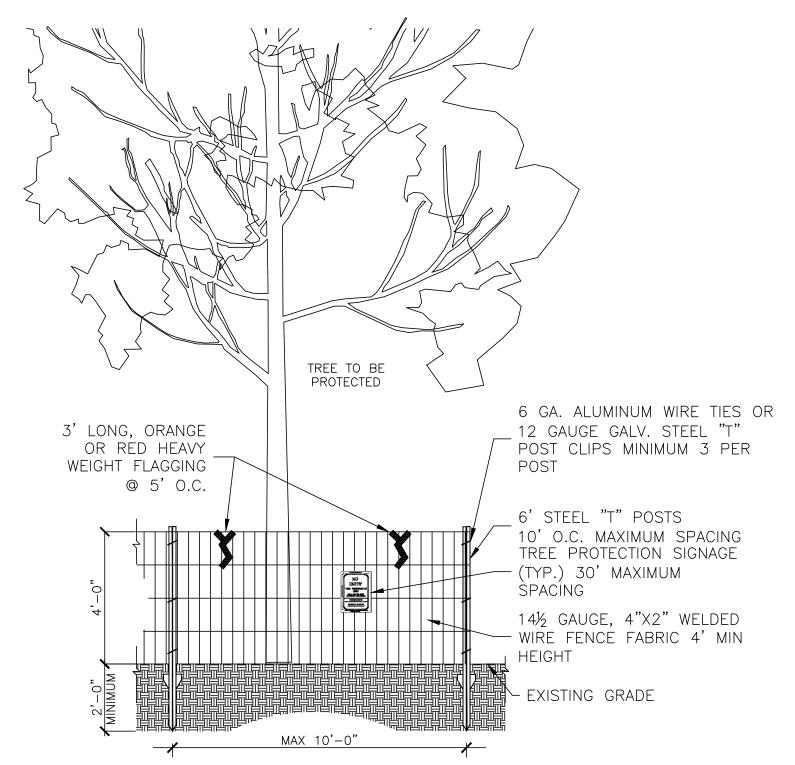
6.1. A CERTIFIED ARBORIST SHALL MAKE REGULAR MONTHLY INSPECTIONS DURING ACTIVE CONSTRUCTION AND DEMOLITION AND PROVIDE REPORTS TO THE OWNER AND CITY ARBORIST. REPORTS SHALL DOCUMENT CONDITION OF TREE PROTECTION DEVICES AND PROVIDE RECOMMENDATIONS FOR MAINTENANCE AND/OR ADDITIONAL CARE.

7. MISCELLANEOUS TREE PROTECTION REQUIREMENTS

- 7.1. NO TOXIC MATERIALS SHALL BE STORED WITHIN 100' OF TREE PROTECTION AREAS.
- 7.2. ALL WORK IN OR NEAR TREE PROTECTION AREAS SHALL BE PERFORMED IN A MANNER TO MINIMIZE DAMAGE TO TREES, SHRUBS, GROUND COVER, SOIL AND ROOT SYSTEMS.
- 7.3. MECHANIZED EQUIPMENT SHALL NOT BE PERMITTED TO ENTER ANY TREE PROTECTION AREAS.
- 8. CANOPY PRUNING & SUPPORT CABLES
- 8.1. CANOPY PRUNING SHALL BE CLEANING PRUNING AND/OR RESTORATION PRUNING AND SHALL BE IN CONFORMANCE WITH CURRENT ANSI A300 STANDARDS AND ISA BEST MANAGEMENT
- 8.2. PRUNING SHALL REMOVE ONLY DEAD, DYING, DAMAGED OR BROKEN BRANCHES GREATER THAN 1" IN DIAMETER. PRUNING OF SMALL TREES MAY INCLUDE REMOVAL OF LIMBS TO IMPROVE
- 8.3. FOLIAGE REMOVAL SHALL NOT BE MORE THAN 25% OF THE TOTAL LIVE CANOPY VOLUME OF ANY TREE IN ANY ONE SEASON. PRUNING SHALL NOT REMOVE INTERIOR BRANCHING EXCEPT
- AS OTHERWISE STATED.
- 8.4. PRUNING FOR SPECIFIC CLEARANCE (FOR CONSTRUCTION ACCESS OR PROPOSED IMPROVEMENTS) SHALL BE REVIEWED AND APPROVED BY THE OWNER AND CITY ARBORIST.
- 8.5. SUPPORT CABLES SHALL BE INSTALLED IN CONFORMANCE WITH CURRENT ANSI A300

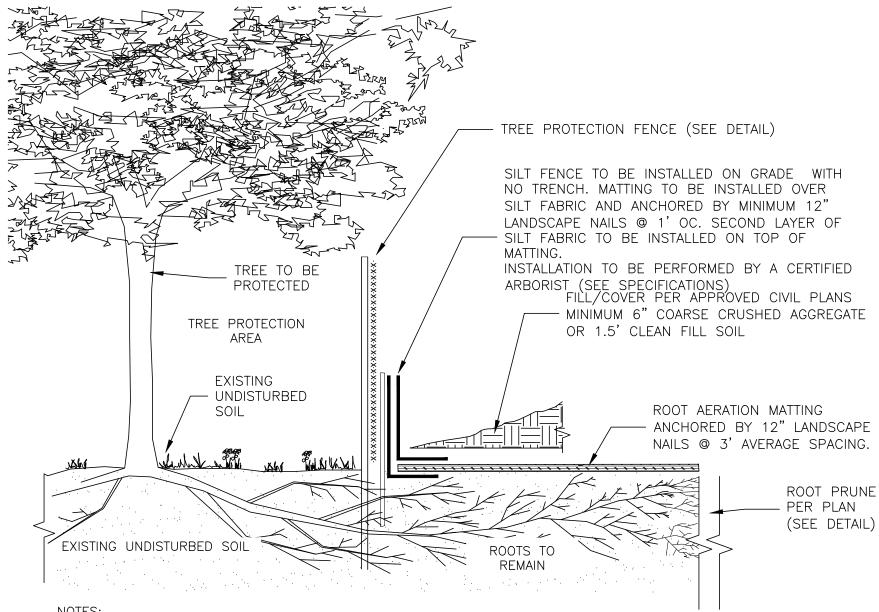
STANDARDS AND ISA BEST MANAGEMENT PRACTICES.

- 9. TREE CONDITION MONITORING INSPECTIONS 9.1. CONTRACT ARBORIST SHALL PROVIDE MONITORING OF THE CONDITION OF RETAINED TREES IN TREE PROTECTION AREAS, AND TREATMENT OF DETRIMENTAL CONDITIONS (INSECTS, DISEASES, NUTRIENT DEFICIENCIES, SOIL MOISTURE, ETC.), AS THEY OCCUR, OR AS APPROPRIATE FOR EFFECTIVE MANAGEMENT.
- 9.2. INSPECTIONS SHALL BE PERFORMED AT LEAST MONTHLY DURING THE GROWING SEASON, BEGINNING PRIOR TO CONSTRUCTION AND CONTINUING THROUGHOUT CONSTRUCTION AND FOR AT LEAST ONE YEAR SUBSEQUENT TO COMPLETION OF CONSTRUCTION ACTIVITIES.
- 9.3. A WRITTEN SUMMARY REPORT INCLUDING SPECIFIC TREATMENTS MADE AND RECOMMENDATIONS FOR ADDITIONAL TREATMENTS SHALL BE PROVIDED TO THE OWNER AND PROJECT ARBORIST SUBSEQUENT TO EACH INSPECTION.



- 1. TREE PROTECTION FENCE SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR
- DEMOLITION. 2. WHERE REQUIRED, SUPER SILT FENCE MAY BE USED IN LIEU OF WELDED WIRE FOR TREE PROTECTION PROVIDED IT IS INSTALLED AND MAINTAINED AS A TREE PROTECTION MEASURE
- AND IS POSTED WITH TREE PROTECTION SIGNS. 3. TREE PROTECTION FENCE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. REMOVE FENCE ONLY WITH APPROVAL AND AFTER ALL SITE WORK HAS BEEN COMPLETED.





- 1. MATTING MATERIAL SHALL BE AMERDRAIN® 700 PERFORATED SHEET DRAIN OR APPROVED EQUIVALENT. MANUFACTURER: AMERICAN WICK DRAIN CORP, 1209 AIRPORT ROAD, MONROE, NC 28110
- 2. RAM SHALL BE ANCHORED BY 12" LANDSCAPE NAILS @ 3' AVERAGE SPACING.
- 3. RAM SHALL BE INSTALLED BY A CERTIFIED ARBORIST EXPERIENCED WITH THESE SYSTEMS.
- 4. PROPOSED RAM IN STRUCTURAL SITUATIONS SHALL BE REVIEWED AND APPROVED BY THE PROJECT CIVIL ENGINEER. ADDITIONAL LAYERS OF MATERIALS, SUCH AS GEONET AND/OR GEOGRID, MAY BE REQUIRED.
- 5. ALL SITE PREPARATION/GRADING TO BE DONE USING SSAT TO MINIMIZE ROOT DAMAGE.
- 6. ALL ADJACENT WORK SHALL BE SUPERVISED BY CERTIFIED ARBORIST



ROOT AERATION MATTING (TYP) SCALE: NTS

TREE PROTECTION ACTION KEY (TPAK)

	DBH			%		ıt	40	SCRZ	CRZ	RZ Canopy (FT)					t	Preservation Measures							1	
Tree #	(Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Condition Rating 6	Condition Rating	Approx Tree Height (FT)	Number of Stems	Structural Critical Root Zone (radius) in Feet	Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	NORTH	EAST	SOUTH	WEST	Removal	Removal By Arborist	Root Prune	Tree Protection Fence	Mulch	Tree Condition Inspections	Construction Oversight/Monitoring	Support Cable	Canopy Prune	Comments	
101	37	douglas-fir	Pseudotsuga menziesii	88	Good	135	1	11.0	55	15	18	20	12			Х	Х	Χ	Х	Х				
102	23	douglas-fir	Pseudotsuga menziesii	88	Good	95	1	9.0	34	5	5	18	18			Х	Х	X	Х	Х				
103	26	douglas-fir	Pseudotsuga menziesii	88	Good	95	1	10.0	39	8	4	4	10			Х	Х	Χ	Х	Х				
104	19	douglas-fir	Pseudotsuga menziesii	88	Good	95	1	9.0	29	8	10	10	4			Х	Χ	Х	Х	Х				
105	21	douglas-fir	Pseudotsuga menziesii	88	Good	95	1	9.0	31	12	12	12	12			Х	Χ	Х	Х	Х				1
106	19	douglas-fir	Pseudotsuga menziesii	88	Good	95	1	9.0	29	16	10	10	16			Х	Χ	Х	Х	Х				
107	28	douglas-fir	Pseudotsuga menziesii	88	Good	95	1	10.0	42	10	25	25	12			Х	Х	Х	Х	Х				1
108	28	douglas-fir	Pseudotsuga menziesii	88	Good	95	1	10.0	42	25	25	25	10			Х	Χ	Χ	Х	Х				
109	32	douglas-fir	Pseudotsuga menziesii	83	Good	65	1	10.0	48	25	25	25	25		X									
110	38	douglas-fir	Pseudotsuga menziesii	88	Good	135	1	11.0	57	16	16	16	16			Х	Х	Χ	Х	Х				
111	22	cedar, Western-red	Thuja plicata	78	Good	65	1	9.0	33	8	8	8	8			Х	Χ	Х	Х	Х				1
112	17	douglas-fir	Pseudotsuga menziesii	81	Good	65	1	8.0	26	14	14	14	14				Х							
113	28	douglas-fir	Pseudotsuga menziesii	88	Good	95	1	10.0	42	26	26	26	26			Х	Χ	Χ	Х	Х				
114	29	cedar, Western-red	Thuja plicata	84	Good	65	1	10.0	43	18	18	18	18		X									
115	16	cedar, Western-red	Thuja plicata	88	Good	65	1	8.0	24	15	15	15	15			Х	Х	Χ	Х	Х				
116	23	douglas-fir	Pseudotsuga menziesii	81	Good	95	1	9.0	34	20	20	20	10			Х	Х	X	Х	Х				
117	27	douglas-fir	Pseudotsuga menziesii	84	Good	95	1	10.0	40	18	25	10	8			Х	Х	X	Х	Х				
119	24	douglas-fir	Pseudotsuga menziesii	88	Good	95	1	10.0	36	25	25	25	25				Х							1
120	36	douglas-fir	Pseudotsuga menziesii	84	Good	135	1	10.0	54	35	35	35	35				Χ							1





App. By			
Rev. App. By By			
No. Date Description			DATE: September 18, 2017 SCALE: 1" = 10'
Date			ГЕ: Sep
No.			DAT

Boundary and Topo Source: George Belmore

Design Draft Approved CH CH Sheet #

Computer File Name: :\30000s\30000\30058.01\CADD\05-ENVF